IN THE SPECIFICATION:

Please amend the paragraph beginning at page 1, line 14 and ending at page 2, line 5, as follows.

--Fig. 8A exemplifies a sensor for detecting light reflected by a toner patch, which uses a photodiode. Fig. 8B exemplifies a circuit for converting an output current of the photodiode into a voltage. The photodiodes ~~201 (~~201-R, 201-G, and 201-B~~)~~, receive light transmitted through red (R), green (G), and blue (B) color filters 202-R, 202-G, 202-B, ~~of red (R), green (G) and blue (B) 202 (202-R, 202-G and 202-B),~~ respectively. Denoted at 105 is an LED serving as a light source. Denoted at 104 is a toner patch of a detection object formed on a transferring material 1. Light components transmitted through the R, G and B color filters ~~202~~ 202-R, 202-G, 202-B out of reflected light 203 from the toner patch 104 enter the photodiodes 201, respectively, and photocurrent is generated in each photodiode. The photocurrent is converted into a voltage by each resistor ~~204 (~~204-R, 204-G or 204-B~~)~~, and the voltage is amplified by each amplifier ~~205 (~~205-R, 205-G, or 205-B~~)~~ to create an output voltage ~~V206 (~~V206-R, V206-G or V206-B~~)~~.--

Please amend the paragraph beginning at page 3, line 21 and ending at page 4, line 5, as follows.

--Furthermore, ~~there has been proposed by~~ Canon has proposed[[,]] a sensor for detecting the color tint of a patch fixed on the transferring material such that feedback can be executed with respect to factors including influences of transfer and fixation which are excluded from feedback objects in the above-discussed density detecting sensor, and influence at the time

of mixing colors which cannot be detected. Based on ~~of~~ results detected by this sensor, feedback operations are performed to the process conditions and image processing such that color stabilization of the image can be further improved.--

Please amend the paragraph beginning at page 12, line 18 and ending at page 14, line 1, as follows.

--Fig. 2 illustrates three characteristics, i.e., relationships between amounts of toners on different transferring materials and their reflectivities. A characteristic line 111 corresponds to a case where a transferring material having the highest reflectivity (namely a white transferring material) is used. On the other hand, a characteristic line 113 corresponds to a case where a transferring material having the lowest reflectivity is used. A characteristic line 112 corresponds to an intermediate case. When the amount of toner is small, the reflectivities of the K toner patches fluctuate as illustrated in Fig. 2 since the reflectivity is influenced by the transferring material. However, as the amount of toner increases to a certain value such as a value creating its optical density of one (1), the characteristic is independent of the underlaid transferring material since the transferring material begins to disappear and light reflected by carbon black forming the K toner patch almost occupies light from the patch. Utilizing such characteristic, the present invention employs a rich K toner patch for detecting the output variations of the sensor without using either of a white-color reference or ~~and~~ a transferring material as a reference. The white-color reference is likely to raise the cost, and ~~is difficult to maintain~~ maintaining its color condition is difficult. As for the transferring material, its color tint and reflectivity are liable to vary depending on the kind of paper. In cases of toners of C, M and

Y other than K, color tint delicately varies under influences of transfer and fixation even if the toner is deposited with such an amount that receives no influence of the transferring material. Therefore, C, M and Y toners are not suitable to be used as the reference for a color sensor in which outputs of R, G and B sensors need to be adjusted to establish a predetermined ratio between these outputs.--

Please amend the paragraph beginning at page 14, line 2 and ending at line 13, as follows.

--A shading ~~Shading~~ correction method and patch detection method for color stabilization will be described with reference to ~~Fig.~~ Figs. 1A and 1B. Denoted at 102 is a portion of a region of the transferring material, or a patch which has the highest reflectivity among patches to be detected for color stabilization control. This is a region for controlling the light amount. Initially, the light amount is adjusted such that the sensor can exhibit the maximum output using the patch or the transferring material whose detected reflectivity is the highest. Thereby, the dynamic range of the sensor can be most effectively utilized.--

Please amend the paragraph beginning at page 14, line 14 and ending at page 15, line 3, as follows.

--In a step 1 (indicated by S1 in Fig. 1B) in the flow of Fig. 1B, the light amount is controlled such that the sensor can acquire a signal with an appropriate amount within a non-saturation range in which the sensor is not saturated. Although the control of the light

amount is not necessarily needed, it is desirable for effective use of the dynamic range of the sensor. The sensor output Vi (i=R, G or B) corresponding to each color filter can be written as

Vi=axPxSixFixRt (1)

where P is the light amount of the light source, Si (i=R, G or B) is the sensitivity of each sensor, Fi (i=R, G or B) is the transmission coefficient of the filter corresponding to each sensor, Rt is the reflectivity of the transferring material, and a a is the proportional constant.--

Please amend the paragraph beginning at page 15, line 18 and ending at page 16, line 11, as follows.

--In a step S2, the sensor detects light reflected by a rich K toner patch 101, and data for shading correction of the sensor is acquired. The density level of the rich K toner patch is equal to or greater than the optical density of one (or 1). During this step, the sensor can receive light reflected by the K toner having a stable spectral reflectivity, since the surface of the transferring material is covered with K toner and there is no influence of difference in color of the transferring material, as shown in Fig. 2. Outputs of the respective pixels corresponding to the R, G and B filters obtained by detecting the rich K toner patch x can be written as

Vr(K)=axPcxSrxFrxRK (2)

Vg(K)=axPcxSgxFgxRK (3)

Vb(K)=axPcxSbxFbxRK (4)

where Pc is the light amount of the light source subsequent to the light amount adjustment in the step 1, and RK is the reflectivity of the rich K toner patch.--

Please amend the paragraph beginning at 16, line 12 and ending at page 17, line 6, as follows.

--In a step S3, a correction value for shading correction is calculated. When color filters are provided on the sensor, outputs from pixels of the sensor corresponding to the respective color filters are not equal even under ideal conditions. Those outputs show different values depending on spectral reflectivity of the patch to be detected, emission spectrum of the light source, transmissivity characteristic of the color filter, and spectral sensitivity of the pixel of the sensor. Accordingly, the shading correction needs to be performed as follows. Sensor outputs are corrected to different predetermined values corresponding to the respective color filters. Alternatively, after all the sensor outputs are corrected to be equal to a common value, the outputs are then calculated considering the above factors at the stage of signal processing. In the latter case, efficiency is hampered ~~not so good~~ since two steps are needed, though the correction can be executed. In this embodiment, the former case is adopted, and the outputs are made equal to the sensor output of the pixel provided with the R filter ~~filer~~.--

Please amend the paragraph beginning at page 17, line 24 and ending at page 18, line 5, as follows.

--In a step S4, those correction coefficients 1/c1 and 1/c2 are stored in a storing unit (not shown) in the image forming apparatus. After that, the patch 104 is detected for color stabilization of the image forming apparatus in a step S5, the detected data is corrected using the data stored in the storing unit in a step S6, and end of detection of a predetermined number of patches is judged in a step S7. The detection of the patch is thus finished.--

Please amend the paragraph beginning at page 18, line 23 and ending at page 19, line 10, as follows.

--Further, a similar correction method can be executed also in the case of the sensor of a spectral system as illustrated in Fig. 9. This correction method differs from that of the case using the R, G and B color filters in the following point. Since light reflected by the ideal rich K toner patch enters the sensor after <u>being</u> subjected to conversion into its spectrum, an output for each spectrum width incident on each sensor element is calculated without using the spectrum transmissivity of each color filter, when an ideal output ratio of respective sensor elements is to be acquired, though the spectrum reflectivity of the detection object, the emission spectrum of the light source, and the spectrum sensitivity of the sensor are used.--

Please amend the paragraph beginning at page 19, line 11 and ending at line 25, as follows.

--Furthermore, even in the case where plural light sources, such as R, G and B LEDs, are provided for a sensor comprised of at least one pixel having a common spectral characteristic, the respective light sources are independently radiated, and color tint of the toner on the transferring material is detected based on the sensor output corresponding to each light source, the following method similar to the above method can be adopted. In this method, emission spectrum dispersion of the light source, and spectral sensitivity dispersion of the sensor element (in the case <u>in which</u> the sensor is comprised of plural sensor elements or pixels) can be similarly corrected by detecting light reflected from the ideal rich K toner patch.--

Please amend the paragraph beginning at page 19, line 26 and ending at page 20, line 15, as follows.

--As described in the foregoing, in the first embodiment, dispersions of R, G and color filters for detecting color tint and density of the toner patch, or dispersions of sensor elements for detecting color tint and density of the toner patch in the spectrum-obtaining system using the diffraction grating or prism, are corrected based on light reflected by the rich K toner patch which receives no influence of the transferring material. Therefore, it is possible to accurately detect the color tint of the toner patch without using the white-color reference, and a highly-reproducible color image forming apparatus can be provided. The rich K toner patch can serve as <u>a</u> reference reflective object for correcting the sensor without being influenced by the transferring material and without using the white-color reference which is likely to raise the cost and be contaminated.--

Please amend the paragraph beginning at page 20, line 17 and ending at line 25, as follows.

--When light reflected by the rich K toner patch 101 is detected as in the first embodiment, a signal level tends to decrease and influence of <u>a</u> quantization error is liable to be large during its AD (analog-digital) conversion, as compared with the case where light reflected by a normal patch is detected. Accordingly, S/N tends to <u>be</u> lower for those reasons and others. A second embodiment is directed to a shading correction method which is improved in this respect.--

Please amend the paragraph beginning at page 20, line 26 and ending at page 22, line 5, as follows.

--The second embodiment features that when a sensor of a type reading photocurrent generated in a photodiode or photo-transistor by the IV conversion is used as illustrated in Fig. 8A, a reading gain is changed between a case where a normal patch is detected and a case where a rich K toner patch for correction of variations is detected. Fig. 3 illustrates a circuit for describing the second embodiment with respect to a pixel corresponding to a filter (here ~~a~~ <u>an</u> R filter). A resistance value for the IV conversion can be switched by a control signal SEL. An anodic side of a photodiode 211-R is connected to ground (GND), and its cathodic side is connected to an inverted input terminal of an operational amplifier 215-R, one terminal of an analog switch 214-R, and one end of a resistor 212-R. A reference voltage Vref is connected to a non-inverted input terminal of the operational amplifier 215-R. The other end of the resistor 213-R, whose one end is connected to the other terminal of the analog switch 214-R, is connected to the other end of the resistor 212-R and an output terminal of the operational amplifier. An output of an IV converted signal 217-R appears at such connection point. When a normal toner patch is detected, a logic is so established that the control signal SEL turns on the analog switch 214-R. If the resistance value of the analog switch 214-R is much smaller than that of the resistor 213-R and is negligible, the IV conversion of photocurrent generated in the photodiode 211-R is executed by a resistance value created by parallel connection of the resistors 213-R and 212-R. The output is Vref when dark, and increases as the light amount increases.--

Please amend the paragraph beginning at page 22, line 21 and ending at page 23, line 3, as follows.

--The reading method for increasing the gain when light reflected by the rich K toner patch is to be detected is not limited to the method of Fig. 3 wherein the photodiode is read using the operational amplifier. Any reading method capable of achieving the same effect can be used. For example, it is possible to adopt a method in which a resistor and a switch are provided parallel to the resistor 204-R in ~~Fig.~~ Figs. 8A and 8B, and the gain at the time of IV conversion is changed by switching the switch ON and OFF ~~of the switch~~.--

Please amend the paragraph beginning at page 24, line 9 and ending at line 17, as follows.

--Where the sensor is a sensor of a type, such as a CMOS sensor and a CCD, in which generated photocurrent is read after being stored for a predetermined time, a decrease in a signal level, which is likely to occur when light reflected by the rich K toner patch is detected, can be prevented by changing the storage time. Highly-precise detection can thus be performed. Here, a shading correction method using such a storage sensor will be described.--

Please amend the paragraph beginning at page 24, line 18 and ending at page 25, line 25, as follows.

--An example of the storage sensor will be described with reference to Fig. 5. In Fig. 5, denoted at 121 is an equivalent circuit of a pixel in a bipolar-type storage sensor BASIS (Base Stored Image Sensor) proposed by Canon. Denoted at 124 is a bipolar transistor for

detecting light with a high current amplification factor. Denoted at 125 is a capacitance between base and collector which serves to store charges. Denoted at 126 is a PMOSFET for resetting a base voltage to Vbb based on a base reset signal ϕbr. Denoted at 127 is an NMOSFET for performing emitter reset based on ~~a~~ an emitter reset signal ϕer. Denoted at 128 is an NMOSFET for transferring a batch of outputs from respective sensors to a ~~capacitance~~ capacitor 129 based on a transfer signal ϕt. Denoted at 130 is an NMOSFET for outputting charges transferred to the capacitance 129 to an output line Vout based on an output ϕsr1 of a shift register 132. Denoted at 131 is an NMOSFET for resetting the output line Vout to a voltage Vhr based on an output line reset signal ϕhr. In the sensor structure of Fig. 5, three pixel portions 121, 122 and 123 are provided corresponding to respective colors of R, G and B, and an on-chip color filter is provided on each pixel. It is thus possible to detect signals of three colors R, G and B out of the reflected light. By performing the AD conversion of the signal supplied to the output line Vout, it is possible to obtain a signal which is produced by storing, for a predetermined time, light corresponding to each wavelength range of R, G and B out of light reflected by the toner surface. Each driving signal is supplied from a CPU or the like (not shown) for controlling the operation of the image forming apparatus.--

Please amend the paragraph beginning at page 27, line 17 and ending at line 27, as follows.

--After a predetermined storage period (ts1 or ts2) elapses, ϕt is turned HIGH in a period from time t4 to time t5 to transfer the stored signal to the ~~capacitance~~ capacitor 129, thereby finishing the storage operation. After that, the shift resistor 132 is operated at time t6 or

thereafter to turn on the NMOS 130, and the output of the sensor is read out to Vout. The read signal is AD-converted by an AD converter (not shown), and is stored in a memory in the CPU (not shown) for controlling the operation of the image forming apparatus.--

Please amend the paragraph beginning at page 29, line 16 and ending at page 30, line 3, as follows.

--Each of the photosensitive drums 5Y, 5M, 5C and 5K is constructed by forming an organic photoconductive layer on an outer circumferential surface of an aluminum cylinder, and is rotated by a driving force transmitted from a driving motor (~~nit~~ not shown). The driving motor rotates each of the photosensitive drums 5Y, 5M, 5C and 5K in a counterclockwise direction in accordance with the image forming operation. Exposure light is supplied to each of the photosensitive drums 5Y, 5M, 5C and 5K from each of scanner portions 10Y, 10M, 10C and 10K such that a surface of each of the photosensitive drums 5Y, 5M, 5C and 5K can be selectively exposed to light. Thus, electrostatic latent images are sequentially formed on those photosensitive drums.--

Please amend the paragraph beginning at page 33, line 16 and ending at page 34, line 4, as follows.

--In Fig. 10, denoted at 31 is an image processing portion for generating image data. The image processing portion 31 not only receives a print job from a host computer (not shown) to develop it to image data to be formed in the color image forming apparatus, but also performs various image processings based on the lookup table and the like stored therein.

Denoted at 35 to 38 are image forming portions for forming colored images of yellow, magenta and cyan, and a non-colored image of black, respectively. Denoted at 30 is a fixing portion for fixing the formed images to the transferring material. Denoted at 39 is a motor for rotating various devices in connection with the image forming, and various rollers for conveying the transferring material. Denoted at 200 is the above-discussed sensor.--

Please amend the paragraph beginning at page 36, line 7 and ending at line 21, as follows.

--In this embodiment, shading correction of the sensor 26 mounted to the above-discussed color image forming apparatus is performed based on light reflected by the rich K toner patch which receives no influence of the transferring material as described in the first to third embodiments. Therefore, it is possible to accurately detect the color tint of the toner patch without using the white-color reference that is likely to raise the cost and be contaminated, and a highly-reproducible color image forming apparatus can be provided. Further, color tint of an image after being subjected to fixation or printing can be accurately detected, and therefore a color image forming apparatus with high chromatic stability can be provided.--

Please amend the paragraph beginning at page 37, line 7 and ending at line 17, as follows.

--Further, description has been made ~~to~~ of a color image forming apparatus of an electrophotographic type in the foregoing, but the apparatus is not limited thereto. The present invention can also be applied to other color image forming apparatuses, such as a printer

of an ink-jet type, in which it is possible to detect the color tint of ink on the transferring material using the above-discussed sensor, and an image with stable color tint can be obtained by feeding detected results back to the injection amount of the ink.--

Please amend the paragraph beginning at page 38, line 15 and ending at line 22, as follows.

--Furthermore, there is provided in the color image forming apparatus the sensor for performing shading correction based on light reflected by the rich K toner patch on the transferring material. Therefore, it is possible to accurately detect the color of an image after being subjected to fixation, and an image forming apparatus with high chromatic stability can be provided.--